APPENDIX D.

DESCRIPTION of Forest and Working Circles, Abad Range.

Range.	Forest.	Area.	Boundaries.	Situation, configuration and soil.	Description of stock.	REMARKS.
Abad.	Bhindi Dhareja.	5,395—24	Bounded on the north by revenue land of deh Bindi Dhareja; on the east and south by the river Indus; and on the west by revenue lands of dehs Rahuja and Sukkur. The Sukkur-Begari band runs along a portion of the western boundary.	From Sukkur northwards for about 4 miles on the right bank of the river. The soil is a good sandy loam varied in places by a loamy sand. The forest depends on the river for irrigation.	This is one of the old shikargahs of the Mirs. In former years it is said the growth was lai and bahan, then kandi took the place of bahan until latterly, when, with the near approach of the river, babul asserted itself. The predominant species now is lai, both mature and immature. Mature babul occurs in dense unmixed patches on the north-west and scattered with bahan and kandi as far south as the old bed of the river which originally formed the southern boundary of the forest. Immature babul and kandi are plentiful in most compartments, but the growth of the former has been severely checked by frost following on seasons of very low inundation, which did not irrigate the area. The southern half of the area from the old boundary is partly covered with dense unmixed lai and partly bare kacha. The kacha and low-lying parts are under rabi cultivation for wheat, matar and sarih.	All the produce of this forest is carted to Sukkur.
	Kadrapur.	2102—32	Bounded on the north by revenue lands of dehs Bechanji and Deda; on the east by Shah-Belo and Bindi Dhareja forests; on the south by revenue lands of dehs Rahuja and Nasirabad; and on the west by revenue lands of dehs Nasirabad and Bechanji.	About 6 miles north of Sukkur and 4 miles from the right bank of the river. Nearly the whole area of the forest lies on the protected side of the Sukkur-Kashmor band, and is cut off from the river except for two sluices in the band by which small portions on the east and south-east receive water. The unprotected part on the south-east is annually flooded.	Kandi predominates with bahan and lai. Sar is plentifully scattered. Mature babul dense in belts or clusters occurs on the south-east portion with lai occupying shallow depressions and kandi on more elevated sites. Tali from seedling planted out cover a strip on the north along the bank of the Gharang wah, and is to be seen on the east close to Got Lakhan. Mature babul, some bahan and a few tali, are to be seen on both sides of the MacRae band on the south. The crops are somewhat different on parts of the north and west due to insufficiency of water. Average density : ·8. Quality: Kandi and bahan are chiefly coppice—about 8 years old. Babul and tali are mature and exploitable. Reproduction: The exploited areas are well regenerated with kandi coppice. Seedlings are rare. Bahan stools have failed to coppice.	Is worked for Sukkur by road.
	Muhari Deda.	396—36	Bounded on all sides by revenue land of deh Mahari Deda.	About a mile to the north of the last described Forest. The soil is very like the last. This forest, too, lies on the protected side of the Sukkur-Kashmor band and is entirely shut off from the river except for a small flood way in the band.	The crops here are very similar to those in Kadrapur forest except that babul and tali are absent and that bahan coppice is seen. Sar grass is specially plentiful and its tall flowering reeds overtop the principal growth in some places. Fires are very injurious as may be seen in the coupe of 1897-98. Average density : ·8 Quality : Thriving. Chiefly coppice—about 8 years old. Reproduction : Satisfactory as above. The 1897-98 coupe has been rather checked by fire.	This forest will be worked with Kadrapur forest as part of the same working circle. Produce reaches the market by road.

Range.	Forest.	Area.	Boundaries.	Situation, configuration and soil.	Description of stock.	Remarks.
Abad.	Shah Belo.	1,571—28	Bounded on the north by revenue land of deh Ali Wahan; on the east by the river Indus; on the south by revenue land of deh Dhareja; and on the west partly by the Sukkur-Kashmor band and Kadrapur forest and partly by revenue land of deh Deda. The Sukkur-Kashmor road passes through the north-west of the forest.	A little to the north of Bindi Dhareja forest and on the east of Kadrapur forest. The soil is the usual sandy loam changing to nearly pure sand in places. The Sukkur-Kashmor band separates this forest from Kadrapur forest on the west and then cuts through the forest to the north-east. The forest being on the bank of the river, most of its area comes under water by direct overflow in abnormal floods. The surface is too raised for ordinary inundation.	Lai is the prevailing species everywhere, often mixed with immature kandi. Bahan occurs scattered, but is more plentiful along the bank of the river, and on the south-east forms a dense mixed crop with babul and a little kandi. In the centre and on the west crops are more open, kanh grass having taken possession of the soil to some extent, and immature kandi with bahan are seen scattered about on the protected side of the band; on the north low kandi coppice with kanh is spread over the area. Density: ·8. Quality: Exploitable. Reproduction: Satisfactory with the exception of babul which fails on the south-east. Young babul is seen in large numbers, but is not doing well. Kandi needs a little artificial aid by broadcast sowing of seed to bring it on quicker.	Produce is exported to Sukkur by road and river.
	Keti-Shah Belo.	14,947—20	Bounded on the north by revenue lands of deh Saidino Bindi, Panwari jagir and Panwari forest; on the east by Panwari jagir and revenue land of deh Jhangro; on the south by Ding forest and revenue kacha land; and on the west by the river Indus.	On the left bank of the river. The soil varies from nearly pure sand to sandy loam. The forest depends on the river for water. An old bed of the river stands full of water in the centre of the forest and in the inundation season overflows its banks and floods a part of the forest on the north and the whole kacha on the south.	This forest is constituted of some portion of the original Shah Belo forest and a considerable area of kacha or new land thrown up by the river on west and south. The separation of the paka portion of Shah Belo forest took place some 15 or 16 years ago, when the river flowed in a bed now marked by a silted [illegible] pression overgrown with [illegible] kanh grass. For the purpose of the working plans, the forest is divided into two working circles on the north and a large area of unworkable kacha on the south:— WORKING CIRCLE I— Originally it was well stocked with mature babul, but in some compartments it has been worked out in annual fellings and in others it stands dead and dying. The surface being elevated above annual floods and the soil being pure and sandy, babul cannot thrive, its place being taken by kandi which is being established in all the dry parts. Babul and bahan occur mixed and of varying density in the north, south and east, the densest crops being found on banks of depressions and dhands where water is near. Lai is found only in shallow depressions on the north-east and west as dense unmixed crop. Average density: ·6. Quality: The standing crop is good and exploitable for timber and fuel. Reproduction: The closed coupes show no reproduction except for a few scattered kandi. WORKING CIRCLE II— Lai is the principal crop in this part which is of recent date. It is often mixed with kanh grass so as to form a dense impenetrable jungle, but fire is a great scourge to the advancing young growth. Good mature babul and bahan stand along the west in dense crops, but elsewhere only in scattered clusters. Immature kandi occurs in some of the compartments towards the bank of the river where the soil is rather poor, and immature babul in the lai compartments which have escaped fire. Average density: ·7. Quality: As above. Reproduction: Satisfactory, but for the prevalence of fires.	The produce of the forest is shipped to Sukkur from the dhands and the river bank. Cultivation (kharif [illegible] being [illegible] the [illegible] in [illegible] but [illegible] kandi.

Range.	Forest.	Area.	Boundaries.	Situation, configuration and soil.	Description of stock.	Remarks.
					The kacha on the south is not workable. It is covered with immature lai giving cover to young babul in places, and the newest accretions are under rabi cultivation. The kacha includes a large piece of Bindi Dhareja forest which became detached from the main body of the forest in 1898. Its surface is much raised above the level of the surrounding recent kacha and is covered with lai and kanh grass, with a few immature babul scattered about.	
Abad.	Khia Bindi.	856—36	The forest is in two parts divided by the river. Right Bank—Bounded on the north by kacha Azimat: on the east by the river Indus; on the south by revenue land of deh Bhatar; and on the west by revenue land of deh Ali Wahan. Left bank—Bounded on the north-east and south by revenue land of deh Saindino Bindi; and the west by the [illegible]	On the right and left banks of the river Indus about 8 miles north of Sukkur. The soil varies from a good rich claycy loam to nearly pure sand, the latter being confined to the kacha frontage on the right bank. The forest is inundated by the river in ordinary floods.	This, too, is an old reserve of 1887, but nearly the whole of its original area has been lost by erosion. The part on the right bank of the river, where the original forest stood, consists of a long narrow strip of paka forest with mature babul standing on it, and a sandy kacha frontage extending up to the bank of the river, and covered irregularly with immature lai. An old channel of the river, which fills with water when the river is in flood, lies between the paka strip and the kacha frontage. The part of the forest on the left bank is covered with both mature and immature lai, dense and well grown, with a few scattered babul. The river lies against the left bank and threatens to erode this part of the forest. Average density: ·7. Quality: The babul on the right bank and much of the lai on the left bank are good and exploitable. Reproduction: The forest is badly protected and much damage is allowed to be done by lopping and browsers, so that reproduction cannot progress.	
	Abad.	2,683—4	Bounded on the north by revenue land of deh Abad Mahitani; on the east and south by the river Indus; and on the west by revenue lands of dehs Garhi Odushah and Adur Takiyo.	On the right bank of the river along which it extends for about 6 miles. The soil of the old forest is good rich clay with a small proportion of sand. The more recent formation on the bank of the river is a loamy sand with patches of pure sand covered over by a thin layer of clay. The forest depends on the overflow of the river for irrigation.	This is one of the old forests. It was once a very large forest, but by the action of the river nearly three-fourths of the original area has been lost. North of Abad village the river divides in two, leaving an island between, constituted of old and new lands of Shahpur and Abad forests. Indications are present that the right channel is filling up with deposited silt and will eventually cease to flow so that the island will be connected with the Abad bank. The Keti or island part is unworkable for the present, being covered with only immature lai with a sprinkling of young babul and bahan with kandi occasionally on drier sites. All the four principal species are represented in the forest, together with tali (*Dalbergia sissoo*) which has been planted out in compartments B^3, B^4 and G^1. Lai probably predominats and is found in a dense unmixed crop between an old bed of the river and its present course. Babul has been worked out in a number of compartments on the north and south, but is still plentiful on the unworked areas. Kandi occupies the drier parts along the west, and bahan is often seen as coppice and standing apart in separate clusters. Average density: ·8. Quality: All good and exploitable for timber and fuel. Lai standing unmixed on the river bank is still immature. Reproduction: Good in all the exploited coupes. Babul is often replaced by kandi, but in a coupe of 1898-99 in compartment G^1 excellent babul coppice is seen with an average diameter of 4″ at the base.	The wood of the forest is boated down the river to Sukkur. A dhoro on the northern boundary of the forest receives water from the river when the latter is in flood and feeds a "kumb" or excavation scoured by the river against an old protected band. The dhoro ought to be cleared and banded across its connection with the "kumb" so as to throw water into the forest for the irrigation of some of the drier parts.

Range.	Forest.	Area.	Boundaries.	Situation, configuration and soil.	Description of stock.	Remarks.
Abad.	Keti Abad and Keti Shahpur.	3,857—24	Bounded on all sides by the river except at the north and where revenue land intervenes between the river and the forest.	Situated in the middle of the river between Abad and Shahpur forests. The soil is a good sandy loam, but a sub-soil of pure sand is apparent in places. The forest is flooded in seasons of ordinary inundation.	An insular strip between Abad and Shahpur forests. The area is made up of paka portions of Abad Shahpur forests, together with recent added kachas all round. Lai is the principal growth everywhere, immature and fairly dense with young babul and bahan scattered. The latter are more plentiful in Abad Keti than in Shahpur and in both kandi is occasionally met with standing on high and dry elevations. Kanh grass abounds where the soil is not sandy, but pasturage is good only on recent kachas which came under water last season. Average density : ·8. Quality : Immature, but promising. Reproduction : Young babul and bahan are fairly numerous ; fire and browsers are their two enemies.	The crops are not exploited yet, but will be so in the course of the next 5 years when fillings may be begun in the south.
	Mohro Mari.	12,382—36	Bounded on the north by revenue land of deh Mohro Mari ; on the east by the Sukkur-Begari road and revenue land of deh Begari ; on the south by the public road from Mohro Mari to Shikarpur, and revenue land of deh Mohro Mari and Darapur ; and on the west by revenue land of deh Ghato Loi. A public road to Shikarpur from east to west divides the forest nearly through the centre.	About 25 miles north of Sukkur and the same distance north-east of Shikarpur. Now river water is admitted by 3 openings in the Kashmor band.	The forest is divided into four working circles :— WORKING CIRCLE I— Kandi predominates, much of it being coppice and varies in density in different places. The western compartments are the best stocked and along the bed of a depression called the Wahini Dhori, the crop is dense and thriving. Good k[illegible] also to be seen in the south[illegible] waterways from the sluices [illegible] Kashmor bund. The eastern compartments being high do not come under water often, and kalar appears on the surface in patches from which kandi is wholly excluded. Lai is poor and scrubby on unirrigated portions, and is not much represented where kandi is thriving. Average density : ·7. Quality : Good exploitable for fuel. Reproduction depends only on kandi and lai coppice in exploited areas, and is not sufficient. Kalar portions are not regenerated. WORKING CIRCLE II—SOUTH-EAST. In this part there is a larger area under kalar than in the other working circles, and the crops are not so good, except on a small part on the south-east. The eastern compartments have been filled over in regular coupes. Lai is rather plentiful, standing even on kalar from which kandi has gone, but much of it is not promising unless irrigation is improved. Average density : ·6. Quality : Exploitable. Reproduction : As above. WORKING CIRCLE III—SOUTH-WEST. Kandi and lai as elsewhere, and excellent crops of the former follow the course of the Wahini Dhori. "Daman" sub-soil areas exist on the east and "kalar" in patches covers the surface in different parts. Average density : ·7. Quality : As above. Reproduction : Satisfactory as regards coppice, seedlings are rare. WORKING CIRCLE IV—NORTH-WEST. The crops are the same here, kalar appears everywhere and the best growth is found in the compartments through which the dhori passes. Lai is not plentiful and for the greater part is not thriving. Average density : ·6. Quality : As above. Reproduction : As above.	It would be well to cut channels from the sluices in the band and distribute the water-supply in accordance with requirements. Numbers of small channels i[illegible] if clea[illegible] i[illegible] not The old [illegible] from the [illegible] the north [illegible] enters the forest from compartment A⁵ ought to be cleared for use.